[0026] Figure 13 is a schematic of a microfluidic device for directed self-assembly and nanomanufacturing of multi-layer amphiphilic vesicles.

[0027] Figure 14 is a schematic of a multilayer amphiphilic vesicle.

[0028] Figure 15 is a schematic of a microfluidic device for multilayer droplet formation.

[0029] Figures 16A, 16B, and 16C are photographs of multilayer droplet formation using patterned hydrophobic/hydrophilic surfaces.

[0030] Figure 17 is a photograph of the formation of satellite droplets.

[0031] Figure 18 is a photograph of the generation of nanoparticles by a bifurcation junction.

[0032] Figure 19 is a collection of photographs showing a method of fusing droplets.

[0033] Figures 20A and ~~21B~~ 20B are schematics demonstrating a method of sorting.

[0034] Figures 21A, ~~22B~~ 21B and ~~22C~~ 21C are photographs showing a method of sorting satellite droplets.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0035] The present invention includes microsystem platforms that enable the automation of complex self-assembly processes. Turning to the figures in detail, Figure 1 shows a microsystem 10 that is embodied on a single microchip for droplet or vesicle formation 20 in which the droplet size and droplet formation speed can be controlled and which also includes designs for post-assembly and post-processing of the droplets (30, 40 and 50), which is discussed in greater detail below. Advantageously, the microsystem 10 of the present invention, and particularly the droplet or vesicle formation system 20, facilitates programmable control of size and composition of emulsified droplets, controlled multi-lamellar and asymmetric vesicles, 100% encapsulation of reagents (e.g. to save precious drugs and reagents), controlled insertion of membrane proteins, and sorting of vesicles/droplets. This microfluidic platform enables the control of concentrations